

# (12) UK Patent Application (19) GB (11) 2 161 796 A

(43) Application published 22 Jan 1986

(21) Application No 8418195

(22) Date of filing 17 Jul 1984

(71) Applicant  
John Difede,  
24818 Tloga Road, Hayward, California 94544,  
United States of America

(72) Inventor  
John Difede

(74) Agent and/or Address for Service  
F. J. Cleveland & Company,  
40-43 Chancery Lane, London WC2A 1JQ

(51) INT CL<sup>4</sup>  
B67B 7/16

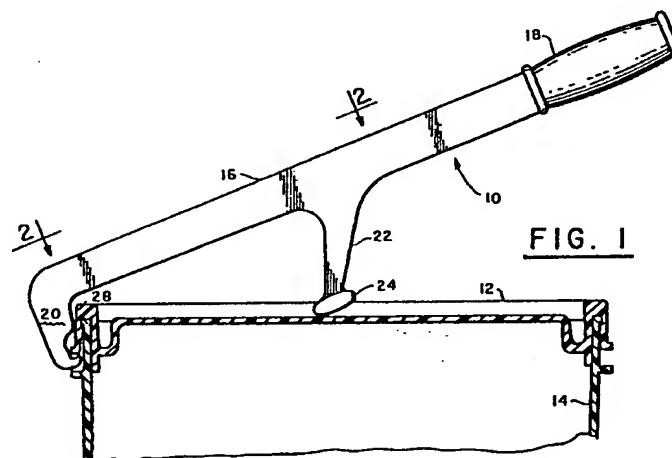
(52) Domestic classification  
B8T 53B

(56) Documents cited  
GB 0468901 US 3885478

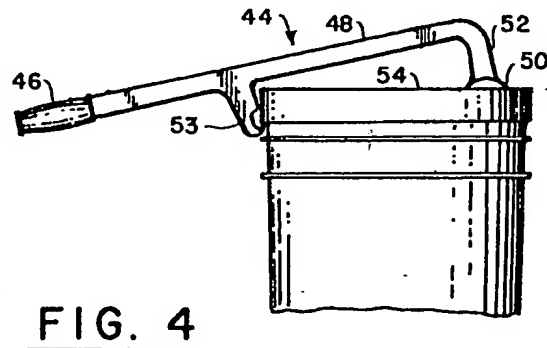
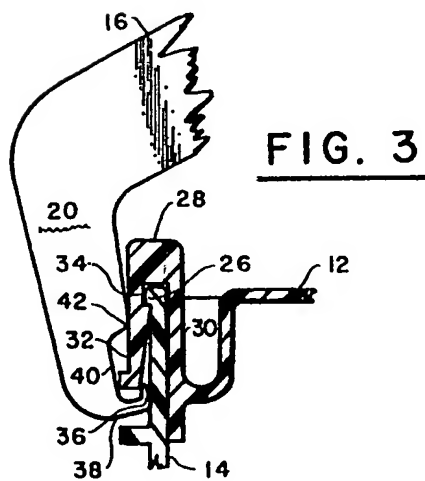
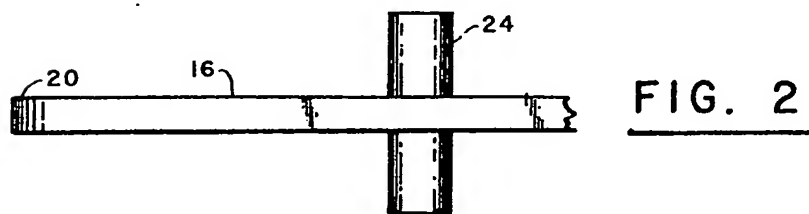
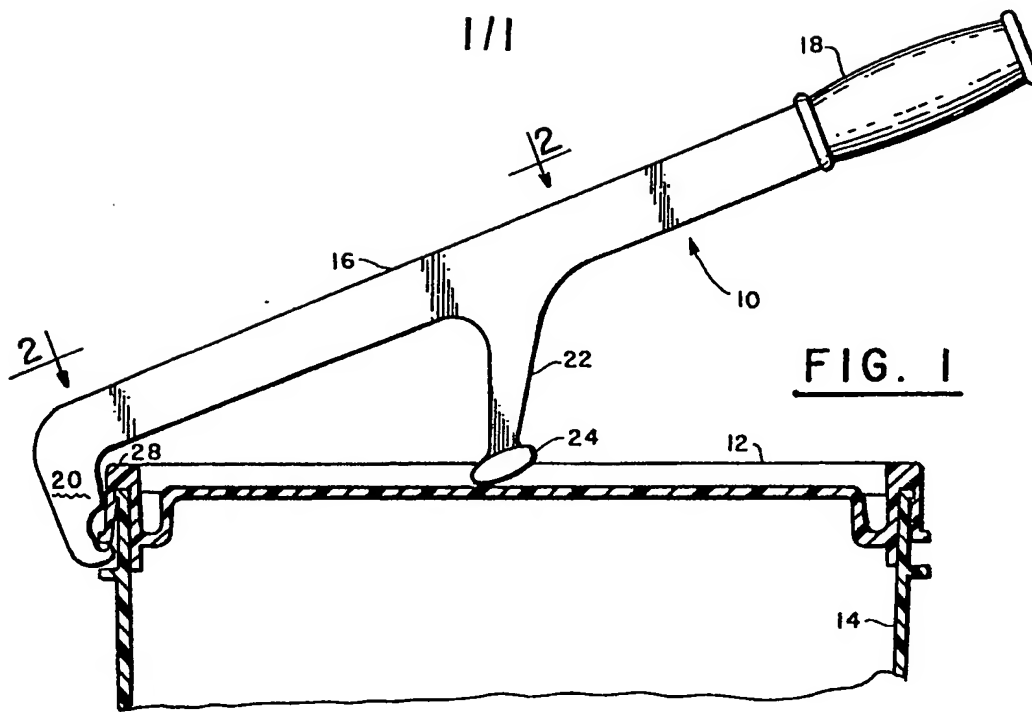
(58) Field of search  
B8T

## (54) Lid remover

(57) A hand tool (10) for rapidly removing lids (12) from plastics buckets (14) without damage to either bucket or lid includes an elongate bar (16) with a handle (18) at one end, a depending fulcrum (22) near the center for contacting the top of the bucket lid and a hook section (20) on the other end that includes a depending and rearward facing hook that is inserted between the bucket edge and the lid ring. Downward force on the handle rapidly snaps the lid from the bucket. In an alternative embodiment, the positions of the fulcrum and the hook section are interchanged, and the force on the handle is exerted upwardly.



GB 2 161 796 A



## SPECIFICATION

## Plastic bucket lid removal tool

5 *Brief Summary of the Invention*

This invention relates to hand tools and in particular to a tool for the removal of lids from plastic buckets.

Plastic buckets having a capacity of approximately five gallons are extensively used for transporting and storing bulk chemicals, bulk food products, and similar products requiring a substantially inert container with an air-tight and reuseable sealed cover that cannot be inadvertently unsealed or removed during transit or storage.

In order to assure a tightly sealed lid, the plastic buckets are formed with a projecting lip around the rim of the bucket and the bucket lid has a folded peripheral ring containing an annular groove which engages the bucket's projecting lip. The result is an inert plastic container with an air-tight lid that is not easily removable. Heretofore, the accepted method of removing such a lid is by the use of a screw-driver or any convenient tool that can pry the lid from the bucket. Unfortunately, the use of such tools generally results in damage to the lid or to the bucket rim, thereby rendering it unsuitable for further use as a sealed container. The tool to be described permits the easy and rapid removal of the plastic bucket lid without damage to either the lid or the bucket.

According to the invention there is provided a hand tool for the removal of a plastic lid from a plastic bucket, said lid having a turned-down peripheral ring containing an annular groove within said ring for engaging a projecting lip in the bucket rim, said tool comprising:

- (a) an elongated bar having a first end and a second end, said bar having a handle at the first end thereof;
- (b) a fulcrum arm depending from said bar, said arm terminating in a rounded fulcrum member for contacting the top surface of said plastic lid; and
- (c) a hook section depending from the second end of said bar, said hook section having an inner edge facing the peripheral ring of the bucket lid and having an upturned hook formed at the lower end of an open throat adjacent the lower end of said inner edge, the lower end of said open throat having a throat width substantially equal to the thickness of the lower edge of said bucket lid peripheral ring, the upper end of said open throat forming a rounded projection at its intersection with said inner edge, said projection being positioned to contact the outer surface of said lid peripheral ring adjacent the annular groove in the inner surface of said peripheral ring.

In an embodiment of the invention the plastic bucket lid removal tool includes a lid hook section which has a thin hook which is inserted between the external fold in the lid peripheral ring and the exterior surface of the bucket. Located on the hook section but have the hook at a point roughly adjacent the annular groove is a rounded projection or

fulcrum point that contacts the exterior surface of the lid's folded peripheral ring. The remainder of the tool includes a relatively long bar having a handle at the end and a fulcrum section near its center that contacts the top surface of the lid.

When a downward vertical force is exerted on the handle, the hook section operates to bend out the outer section of the lid's folded peripheral ring below the annular groove and effectively unhooks that annular groove from the mating projecting lip at the bucket rim so that the lid may easily and rapidly be removed with damage to either the lid of the bucket.

80 *Brief Description of the Drawings*

The invention will now be described by way of example only with particular reference to the accompanying drawing; wherein:

*Figure 1* is an elevation view of a lid removal tool and sectional view of a plastic bucket and lid; *Figure 2* is a sectional plan view of the tool taken along the lines 2-2 of *Figure 1*.

*Figure 3* is an enlarged sectional view of the hook section of the lid removal tool in an operating position at the edge of a bucket and lid; and

*Figure 4* is an elevation view illustrating a second embodiment of a lid removal tool.

*Detailed Description of the Preferred Embodiment*

Referring to *Figure 1* the lid removal tool 10 is positioned on a bucket lid 12 which is securely sealed to its plastics bucket 14. Tool 10 is formed of an elongate bar 16 having a convenient handle 18 at one end and hook section 20 depending from the opposite end. Approximately midway between the hook section 20 and handle 18 is an arm 22 that extends downward from the bar 16 and is connected to a fulcrum bar 24. As illustrated in *Figure 1*, the arm 22 angled forward on the elongate bar 16 toward the hook section 20 so that a downward force on the handle 18 will exert a corresponding horizontal component of force on the lid toward the hook section 20. The fulcrum bar 24 preferably has a rounded or elliptical lower surface to roll on the lid surface and is connected to the end of arm 22 so that its elliptical long axis is substantially parallel with the bar 16. As illustrated in *Figure 2*, the fulcrum bar 24 is attached at right angles to the bar 16 and arm 22.

Typically, the bar 16 is approximately one centimeter in thickness and four centimeters in width. The space between the hook section 20 and the fulcrum bar 24 is approximately fifteen centimeters and the length of the arm 22 is in the order of six centimeters and is connected to the center of the fulcrum bar 24 which is approximately seven centimeters in length as shown in *Figure 2*. The total length of the bar 16 between handle 18 and hook section 20 is a matter of choice and in the preferred embodiment the total length is approximately sixty centimeters to provide adequate leverage for the very easy removal of a bucket lid.

As illustrated in detail in *Figure 3*, the rim of a plastic bucket 14 is formed with an external lip 26. The bucket lid 12 is formed with a double fold 28

at its periphery. The inner ring 30 of the fold has a surface in contact with the inner surface of the bucket and contacts the outer surface of the bucket below the lip 26. In the outer ring 32 adjacent the lip 26 is an annular groove 34 which mates with the lip. When the bucket lid 12 is in position on the bucket 14 so that the annular groove 34 engages the lip 26, it results in a tightly sealed inert container that cannot be inadvertently opened.

- 10 As illustrated in Figure 3, the hook section 20 of the lid removal tool 10 is formed with a small hook 36 which extends up about 5 millimeters from the base surface 38 of the hook section and has a throat dimension of about 5 millimeters from the surface 40. The surface 40 is about 10 millimeters in length and terminates at a rounded projection 42 that is formed in the inner surface of the hook section 20 approximately 15 millimeters from the base surface 38 and tangent to a plane that is approximately aligned with the inner surface of the hook 36. While the dimensions indicated above are approximate and may be altered as desired, they should place the location of the rounded projection 42 upon the external surface of the outer ring 32 of the lid's double fold 28 at a point that is adjacent or just below the lower surface of the annular groove 34.

- To operate the tool, the hook 36 is inserted between the inner surface of the lid's double folded outer ring 32 and the outer surface of the bucket 14 as indicated in Figures 1 and 3. The fulcrum bar 24 is placed on the top surface of the lid 12 and the handle 18 is pushed downward to force the hook 36 upward so that it pulls the outer ring 32 away from the outer surface of the bucket 14, resulting in a disengagement of the annular groove 34 from the lip 26 and a rapid and easy opening of the sealed bucket. The downward force on the handle 18 also results in a horizontal bucket-stabilizing force of the lid toward the hook section 20 which operates in preventing accidental tipping of the bucket.

- Figure 4 illustrates another embodiment of a lid removing tool 44 having a handle 46 at one end of an elongate bar 48 and a fulcrum bar 50 at the end of a depending arm 52 at the opposite end of the bar 48. Located between the fulcrum 50 and handle 46 is a hook section 53 which is identical in all respects to the hook section 20 described in connection with Figures 1-3. To operate the tool illustrated in Figure 4 it is only necessary to first engage the hook of the section 53 under the lid 54, place the fulcrum bar 50 on top of the lid, and lift the handle 46.

## CLAIMS

1. A hand tool for the removal of a plastic lid from a plastic bucket, said lid having a turned-down peripheral ring containing an annular groove within said ring for engaging a projecting lip in the bucket rim, said tool comprising:

- (a) a fulcrum arm depending from said bar, said arm terminating in a rounded fulcrum member for contacting the top surface of said plastic

lid; and

- (b) a hook section depending from the second end of said bar, said hook section having an inner edge facing the peripheral ring of the bucket lid and having an upturned hook formed at the lower end of an open throat adjacent the lower end of said inner edge, the lower end of said open throat having a throat width substantially equal to the thickness of the lower edge of said bucket lid peripheral ring, the upper end of said open throat forming a rounded projection at its intersection with said inner edge, said projection being positioned to contact the outer surface of said lid peripheral ring adjacent the annular groove in the inner surface of said peripheral ring.

2. A hand tool as claimed in Claim 1 wherein said rounded fulcrum is a bar laterally connected to the lower end of said depending fulcrum arm, the lower lid containing surface of said fulcrum bar being rounded for rolling contact with the lid surface.

3. A hand tool substantially as hereinbefore described and as shown in Figures 1 to 3 or Figure 4 of the accompanying drawing.

Printed in the UK for HMSO, D8818935, 12/85, 7102.  
Published by The Patent Office, 25 Southampton Buildings, London,  
WC2A 1AY, from which copies may be obtained.